

Assessment of Health Facilities for Implementation of Non-communicable Disease Package

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ABSTRACT

Background: Non-communicable Diseases are an alarming public health emergency in Nepal. Owing to the risk of NCD's in Nepal, Government of Nepal has developed a Multisectoral Action Plan for Non-communicable Disease 2014-2020 and has adopted the World Health Organization Package of Essential Non-communicable Disease protocol. Prior for its implementation in Nepal, baseline study has been carried out to assess the status of health facilities in Nepal.

Methods: A descriptive cross-sectional study was carried out in Kailali and Ilam district encompassing a total of 92 health facilities. A set of structured questionnaire and interview guideline was used to obtain the data. Collected data was transferred to Microsoft Excel, cleaned and analyzed in SPSS 16.0. Descriptive analysis was performed to express the frequencies and relative frequencies

Results: Of the total health facilities, 49 and 43 health facilities of Ilam and Kailali were interviewed. The hospital of Ilam consisted all the procedure, equipment and medicine for the management of NCDs whilst, health posts lacked Oxygen services. Only 592 posts were fulfilled out of 704 sanctioned post in both the districts of which only 161 were trained in management of NCDs. A total of 231 patients were diagnosed with NCDs before the day of study in all the health facilities of both districts.

Conclusions: Study reveals the gaps in capacity of health institution and system in terms of training, supply, equipments, and diagnostics. However, training of health workers, supply of essential medicines and improving the service delivery would supplement the effective implementation of PEN in Nepal.

Keywords: Bupivacaine; dexmedetomidine; intrathecal adjuvant; saddle spinal block.

INTRODUCTION

The emerging pandemic of NCD's creates a new frontier for health professionals globally.^{1,2} The deaths due to NCD's (Cardiovascular disease, diabetes, cancer and respiratory disease) in Nepal have increased from 51% of all deaths in 2010 to 60% in 2014.^{3,4} In Nepal, addressing NCD is not getting much attention from the government, academicians and development partners. Simple measures at population and individual level have not been implemented in an effective way.^{4,6} So far, best buy approach as proposed by WHO could be implemented for NCDs prevention and management through primary health care approach.⁷⁻¹²

To address the emerging risk of NCDs, Ministry of Health

Nepal has launched the PEN package in Nepal.^{4,6} WHO package of essential non-communicable diseases (PEN) is an essential package and provides evidence based cost effective and high impact intervention for integrated management of diabetes, hypertension, kidney disease and cardiovascular risks. PEN implementation bridges the NCD service gaps between what is needed and what is available to reduce the burden through a system approach to strengthen primary health care system.¹¹⁻¹⁵

Nepal has adopted the WHO PEN with a strategy of scaling the PEN program in 30 districts of Nepal.⁵ It was quintessential to assess the existing structure, system and other facilities for implementation of PEN. In order to bridge the key information and evidence gap in service delivery, this study was conducted with an objective to

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assess the existing structure, supply and service system, facilities, equipment, medicine, procedure and capacity of health institution to deliver quality services.

METHODS

This was a health facility based cross sectional study conducted in 92 health facilities. Health facilities comprised of district hospital, primary health care center and health post. The study was conducted in between January to February 2017.

The study was conducted in 49 health facilities in Ilam and 43 health facilities in Kailali district. Ilam district is a Hill district of Province No. 1 in eastern Nepal. Kailali is a Terai plain of Province 7 in far western Nepal. Two districts (Ilam and Kailali) were selected being based on the criteria of health insured district, human resources; fulfilled posts, high disease burden and ecological representation. In each district health facilities were selected purposively. Convenience sampling technique was used to get the study sample. Male or female (each) individual from the selected health facilities present at the time of data collection constituted the study population.

A face to face interview and was conducted with the respondents using structured questionnaire and interview schedule. The questionnaire was used to collect the data on human resources, procedures, service delivery and other services and facilities in favor of NCDs. Observation of store register was done to collect the information on availability of medicines and equipments. Trained researchers collected the data from respondents in the close monitoring of principal investigator/researchers. was developed in close consultation with subject expert including focal person from Primary Health Care Revitalization Division (PHCRD) and WHO The filled questionnaires were checked for completeness by data collectors and research supervisors. Two days training for the field level researchers was organized by doing the data collection demonstration/simulation exercises before deploying to the field. Daily tracking by distance (email and phone call) and regular monitoring and supervision was done during data collection.

Collected data were entered in spreadsheet. Data cleaning, editing and analysis were done in SPSS 16.0. Descriptive statistical analysis (Percentage, mean) was performed. The study was approved by the Ethical Review Board of the Nepal Health Research Council. Formal permission was taken from the concerned authorities in the selected district and health institution. Respondents were informed about the objectives of the

study. An informed written consent was obtained from the participants.

RESULTS

Among the total 92 health workers participated in the study, 78.3% were male and 21.7% were female of which 50% of the respondents were in the age group of 30-44 years.

Table 1. Socio-demographic Information of respondent.

Information	Number	Percentage
Sex (N=92)		
Male	72	78.3
Female	20	21.7
Age (N=92)		
15-29 years	25	27.2
30-44 years	46	50
45-60 years	21	22.8

Health facilities in both the district comprised of Medical Officer, HA/Sr. AHW, Staff Nurse, AHW, ANM, Lab, admin and others. In Ilam, 279 post were filled of the 357 sanctioned post whilst 313 post were filled of the 347 sanctioned post in Kailali. In Ilam, of the 14 sanctioned post of medical officer, 17 were filled. The additional 3 posts of medical officer were hired by Health Facility Operational Management Committee. In Kailali, of the 11 sanctioned post of medical officer 12 were filled. Similarly, additional 1 post of medical officer in Kailali was also hired by HFOMC committee. 101 post of ANM were filled out of 96 sanctioned post whereas post of lab was vacant of the total 10 sanctioned post.

Overall, 61 staffs out of 279 in Ilam and 100 staffs out of 313 in Kailali were trained about the management of NCD's. This account for 27.19% of the total staffs in both district were trained about the management of NCD's. However, the personnel of lab in Ilam and staff nurse and lab personnel in Kailali had not received the training on management of NCDs.

Majority of the health facilities (87.8%) in Ilam were located in rural area while 90.7% of health facilities in Kailali were located in rural area. The mean opening hour of health facility per day was 7.20 and 7.77, respectively in Ilam and Kailali. 44.9% of the health facilities in the Ilam did not meet the criteria of opening at least 7 hrs a day. Similarly, the mean opening hour of health facilities per week was found to be 43.8 and 47.7 in Ilam and Kailali, respectively. Public holidays were included in mean opening hour of health facility per

week. Only 32.7% of health facilities in Ilam meet the criteria of opening at least 42 hrs a week. The number of the OPD visit in last month in Kailali was found to be

higher (24104) than that of Ilam (5972). Only 12.2% and 18.6% of health facilities in Ilam and Kailali were at the distance less than 30 minutes, respectively.

Table 2. Health workforces of health facilities.

Human Resources	Districts					
	Ilam			Kailali		
	Sanctioned	Filled	Trained in NCDs	Sanctioned	Filled	Trained in NCDs
Medical officer	14	17	7	11	12	6
HA/ Sr. AHW	52	31	24	48	37	55
Staff Nurse	10	7	3	17	16	0
AHW	111	87	24	108	97	15
ANM	103	95	2	96	101	2
Lab	6	6	0	10	0	0
Admin	57	30	0	52	45	0
Others	4	6	1	5	5	22
Total	357	279	61	347	313	100

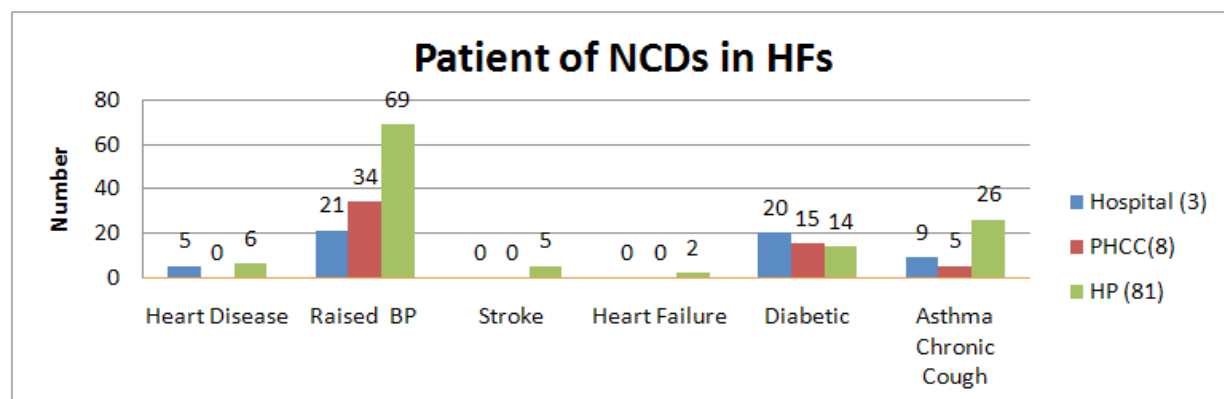


Figure 1. Patient of NCDs in previous day of study.

Table 3. Characteristics of health facilities.

Information about HF	Ilam (n=49)	Kailali (n=43)
Location		
Urban	6 (12.7%)	4 (9.3%)
Rural	43 (87.8%)	39 (90.7%)
Opening hour per day		
Mean opening hr per day	7.2	7.77
HF meeting the criteria (%)	55.1	88.4
Opening hour per week		
Mean opening hr per week	43.8	47.7
HF meeting the criteria (%)	32.7	65.1
Average number of patient visit per day	260	1048
Number of OPD visit in last months	5972	24104
Provision of referral of patients		

System of referral (%)	98	83.7
HF at the distance less than 30 minutes (%)	12.2	18.6

Among 231 patients diagnosed with NCDs in previous day in various HFs of both districts, highest rate of patients were attributed to raised BP (124 patients) followed by diabetes (49) and asthma chronic cough (40) and least was heart failure (2 patients).

The availability of all basic procedure (O₂ service, IV fluid, IV injection, IM injection, Ambu bag, visual activity examination, neuro examination, ophthalmoscopy) was found in hospital of Ilam district. Oxygen service was not available in health post of Ilam district. Only, 2.3% of health post had the procedure of cardiopulmonary resuscitation. Only 10.8% of health post in Kailali had oxygen service.

Table 4. Percentage availability of procedure in health facilities.

Procedures conducted at HF's	District					
	Ilam			Kailali		
	Type of Health Facilities					
	Hospital (1)	PHCC (4)	HP (44)	Hospital (2)	PHCC (4)	HP (37)
O ₂ Service	100	70.8	0	100	100	10.8
IV fluid	100	50	81.8	100	50	97.3
IV Injection	100	100	97.7	100	100	100
IM Injection	100	100	100	100	100	100
Subcutaneous Injection	100	100	95.5	100	100	100
ECG	100	50	NA	100	75	NA
Cardiopulmonary Resuscitation	100	100	2.3	50	100	18.9
Ambu Body	100	100	25	100	100	67.6
Visual Activity Examination	100	50	31.8	NA	25	35.1
Neuro Examination	100	25	11.4	50	75	24.3
Ophthalmoscopy	100	25	6.8	100	25	5.4

Table 5. Percentage availability of equipments in health facilities.

Availability of Equipments in HF's	District					
	Ilam			Kailali		
	Type of Health facilities					
	Hospital (1)	PHCC (4)	HP (44)	Hospital (2)	PHCC (4)	HP (37)
BPMD	100	100	98	100	75	100
Oxygen Cylinder	100	100	NA	100	75	NA
Weighting Machine	100	100	98	100	100	100
ECG Machine	100	0	NA	100	100	NA
Measuring Tape	100	100	98	0	100	84
Nebulizer	100	100	25	100	100	30
Stethoscope	100	100	100	100	100	97
Thermometer	100	100	100	100	100	97
Pulse Oximeter	100	50	4.5	100	25	11
Spacer	100	25	21	50	50	11
Glucometer	100	100	91	50	100	87

Table 6. Percentage availability of medicines in health facilities.

Medicines	District					
	Ilam			Kailali		
	Hospital (1)	PHCC (4)	HP (44)	Hospital (2)	PHCC (4)	HP (37)
Digoxin	100	75	9.1	50	75	32.4
Salbutamol tablet	100	100	100	100	100	81.1
Metformin	100	50	52.3	50	75	37.8
Adrenaline	100	100	34.1	100	75	18.9
Aspirin	100	100	86.4	100	75	32.4
Atenol	100	100	81.8	100	100	35.1
Amlodipine	100	75	84.1	100	100	35.1
Hydrochlorothiazide	100	50	20.5	50	25	51.4

Table 7. Availability of facilities and services.

	District					
	Ilam			Kailali		
	Hospital (1)	PHCC (4)	HP (44)	Hospital (2)	PHCC (4)	HP (37)
Stabilization of bed in HFs	100	75	41	50	100	62
Provision of safe disposal of needles	100	100	97.7	50	100	91.9
Facility of ambulance	100	25	2.3	100	25	10.8

The hospital of Ilam had all the basic equipments while hospitals of Kailali lacked measuring tape. PHCC of Ilam lacked the ECG machine.

The availability of medicines that are used for management of major NCDs is shown in the table. Hospital of Ilam comprised all the medicines while only one of the hospital in Kailali had digoxin, metformin and hydrochlorothiazide. Only, 9.1% of health post in Ilam had digoxin whilst only 18.9% of health post in Kailali had adrenaline.

Less than half (44.9%) and 65.1% of health facilities in Ilam and Kailali respectively contained the facility to stabilize a very ill patient before transferring to the referral institution. Majority of the health facilities (98% in Ilam and 90.7% in Kailali) had the provision of safe disposal of needles. Only 2.3% and 10.8% of health post in Ilam and Kailali comprised the ambulance facility respectively. However, 73.2% of health facilities had the capacity to arrange ambulance in case of emergency. Less than half of the health facilities used ambulance to transfer the patient to health facilities while 5% of them used stretcher.

Counseling for diet, tobacco, alcohol, exercise, diabetes and insulin are provided by 69.9% of the health facilities in accounting both the districts. However, only 53.4% of health facility provided counseling on self administration of insulin.

Of the total health facilities in both the districts, 94.6% of the health facilities kept the general OPD record of the patient while 3.3% of them kept records of some patients only whilst 2.2% of the health facilities didn't keep the record at all. All hospital and PHCC of both the district and 97.7% of HPs of Ilam and 89.2% of HPs of Kailali kept the general OPD record of all the patients. The records were mostly kept in registry system (89) followed by patient files (28).

Majority (91.3%) of the health facilities comprised the system of referring the event of emergency chronic disease. Among them, only 16.7% of the referred facilities met the criteria of being in distance of less

than 30 minutes

More than half, (67.4%) of the health facilities in both the district (69.4% in Ilam and 65.1% in Kailali) provided subsidies. Subsidies were mostly given for treatment (95.2%) followed by diagnosis (50%) of NCDs.

DISCUSSION

WHO PEN is designed for efficient use of limited health care resources, access to basic diagnostics, essential medicines and referral systems which is very crucial for provision of effective care for the people who are at risk of NCDs.¹¹ In Nepal, WHO PEN protocol has been developed and adapted gaining the national consensus in December 2015 followed by the PEN protocol endorsement in June 2016. Similarly, draft PEN Implementation Plan 2016-2020 has been developed with a piloting of PEN program in two districts; Ilam and Kailali. Nepal has a plan of expansion of PEN in 8 districts in FY 2073/2074 with additional 20 districts in FY 2074/2075.⁵

The findings of our study revealed the need for capacity building and enhancement of the health facilities for effective implementation of PEN in Nepal. Of the 704 sanctioned posts in both the districts, only 592 post were fulfilled. Effective implementation of package widely depends on the manpower. This indicates the need of human resource to be fulfilled for the delivery of quality services at primary care level. The currently available health human resources in primary care setting are able to deliver the low cost service and address the health needs. They could respond the changing health needs sufficiently and efficiently further saving the health care cost.¹⁶ Less number of the health workforce are trained in management of NCDs. Despite, health workers needs to be prepared to assess, diagnose, manage and refer the patient appropriately. So they need to acquire the appropriate skills to deliver the quality services. In this regard, Government has already developed the PEN Training Package in December 2016. Based on which District Level Training has been completed in 14 district and is planned for further more districts. This could be a way out to address the need of capacity building for effective service delivery.¹⁷

Although majority of the hospitals in both the district comprised the procedure for management of NCDs, none of the health post in Ilam and few (10.8%) health posts in Kailali had the oxygen service. Hospitals were found to be more resourceful than primary health centers and health posts.

The result of the study focused on need to ensure the availability of all basic equipments at all the levels of health facilities. Regarding the availability of the basic equipments for the management of major NCDs; equipments like ECG machine, oxygen cylinder and pulse oximeter were scarce. Similarly, spacer and glucometer were available in one of the two hospitals of Kailali. Regular availability of medicines for NCDs is an important indicator for service delivery. The baseline assessment showed that though all medicines were always available at hospital of Ilam, drugs like Digoxin, and Hydrochlorothizide were present always in one out of two hospitals in Kailali. Digoxin, and Adrenaline were least available in health posts of Ilam while all drugs related to NCDs were regularly available in few health posts of Kailali district. At the time of the survey, medicines like Statins, Enalapril and Glibenclamide were not available in any of the health facilities in both districts. This means the emergency situations at health institution may not be managed promptly leading to needless deaths. This demands the need of the strengthening of the health facilities especially at primary health center and health post level to combat NCDs. Adequate and consistent supply of basic diagnostics, equipments, essential medicines is essential for effective management of NCDs. Enhancing the improvement in supplies at Primary care for NCDs leads to fewer complications requiring care at high levels.¹⁸⁻²⁰ Government has enlisted the NCDs drugs in essential drugs list. NCDs diagnostics specification preparation has been completed till date whereas drugs procurement in 30 programmatic districts is in pipeline.¹⁷

One in two hospitals of Kailali did not have the facility to stabilize very ill patients before referral while its' all primary health center and 62.2% of the health posts have such facility. The Ilam district hospital has the facility to stabilize very ill patients but only 75% of primary health center and 40.9% of health posts have such facility. It is thus necessary to make available such facility near to population.

The mean opening hours has to be seen seriously as implementing PEN will create demand of these services in the health facilities.

Health facilities serve a good number of populations in

both Ilam and Kailali. Interestingly, among the patients diagnosed with NCDs in a day before the data collection, raised blood pressure, diabetic and respiratory diseases were the major diseases or conditions among the patients. This figure has to be seen carefully as larger population might be suffering from NCDs or may have risk factors related to NCDs.

Capacity of health facility seemed well in terms of referral system during the event of emergency chronic disease in both districts as 91.3% of the HF's had this provision. This might be a additional point for timely management of emergency cases. However, the low availability of ambulance might be an area where the focus should be made so that no lives will be lost at time of emergency and timely referral can be made. Efficient use of the limited health care resources available, availability of basic diagnostics, essential medicines, referral system, and health workforce can equitably deliver the services based on the Primary health care. Integrating the NCD into PHC requiring minimum set of standards aids to initiate the process for attainment of Universal Coverage in Nepal.^{5,11}

CONCLUSIONS

The existing status of the health facilities for the implementation of PEN is satisfactory. Despite the fact that majority of the hospitals have the equipments, procedure and medicines available, PHCCs and HPs needs to be equipped and capacitated in order to cover maximum in population at baseline level. Further, training on NCDs management needs to be fostered while strengthening the effective service delivery is key for attainment of WHO PEN.

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